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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/581,001

Applicant(s)

ELMERS ET AL.

Examiner

Patrick F. O'Reilly III

Art Unit

3749

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2009 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
- _____ Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- _____ Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This action is in response to applicant's amendment received on September 18, 2009.

Drawings

2. The drawings are objected to because the lineweights employed in the sole figure are not uniform and, therefore, do not satisfy the requirements of 37 CFR 1.84(l).
3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 1 is objected to because of the following informality: the claim does not contain a recognized transition that permits the determination of whether the claim is intended to be

inclusive of additional elements or alternatively, exclusive of additional elements. This claim should be rewritten with either an open-type transition, such as “comprising” or “including”, or a closed-type transition, such as “consisting of”. For the purpose of an examination on the merits, the examiner has considered claim 1 to be inclusive of additional elements (open-type transition presumed). Appropriate correction is required.

5. Claim 1 also is objected to because of the following informality: the multiple uses of the term “sites” in claim 1 renders the claim unclear. In order to better clarify the scope of the claimed invention, the examiner believes that the “sites” referred to in line 3 of this claim should be described as the “first sites”, whereas the “sites” referred to in line 5 of this claim should be described as the “second sites”. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. In claim 1, the use of the term “the introduced air” renders the claim indefinite. In base claim 1, the claim upon which claim 11 depends, reference is made to “air introduced into the passenger compartment at sites remote from the passengers” and “air introduced into the passenger compartment at sites close to the passengers”. Thus, it is uncertain whether “the introduced air” recited in claim 11 is meant to refer to the air introduced remote from the passengers, the air introduced close to the passengers, or the air introduced at both such

locations. Consequently, one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. For the purpose of an examination on the merits, the examiner has considered the term “the introduced air” in claim 11 to be referring to “the air introduced into the passenger compartment at sites remote from the passengers *and* sites close to the passengers”.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. **Claims 1-7** are rejected under 35 U.S.C. 102(b) as being anticipated by UK Patent No. GB 954,342 (“GB ‘342”). The specification and the drawings in the GB ‘342 reference disclose all of the elements recited in **claims 1-7** of this application.

11. Specifically, in regard to claim 1, the GB ‘342 reference discloses all of the claimed elements, including: when cooling is required (e.g., by air conditioning unit 22) air is introduced into the passenger cabin at sites remote from passengers (e.g., in the upper region of the aircraft cabin, served by air distribution nozzles 27), said introduced air being at a lower temperature than air introduced into the passenger cabin at sites close to passengers (e.g., near the floor 14 of the aircraft cabin, served by floor airflow openings 20 and side vents 21) in the cabin (the air distributed by upper nozzles 27 is controlled by thermal control member 28 and is cooled to a lower temperature using air conditioning unit 22 when cabin cooling is required, whereas the air distributed by lower vents 21 is controlled by an independent thermal control member 30 and comprises of hot bleed air). Refer to GB ‘342, Figures 1-3; page 1, lines 75-92; and page 2, lines

1-124. Therefore, because all of the elements in claim 1 of this application are disclosed by the GB '342 reference, this claim is rejected in accordance with 35 U.S.C. 102(b).

12. In regard to claim 2, the GB '342 reference further discloses that the sites close to passengers (e.g., near the floor 14 of the aircraft cabin, served by floor airflow openings 20 and side vents 21) are located nearer to the floor (14) of the passenger cabin than the sites remote from passengers (e.g., in the upper region of the aircraft cabin, served by air distribution nozzles 27). See GB '342, Figure 2 and page 2, lines 14-49. Thus, the GB '342 reference meets the language of this claim.

13. In regard to claim 3, the GB '342 reference further discloses that the sites (e.g., near the floor 14 of the aircraft cabin, served by side vents 21) close to passengers are located on the floor (14) of the passenger cabin (the bottom edges of side vents 21 are located on the floor 14 of the aircraft compartment, airflow openings 20 are disposed through floor 14) and the sites (e.g., in the upper region of the aircraft cabin, served by air distribution nozzles 27) remote from passengers are located in the upper region (see Fig. 2) of the passenger cabin. Refer to GB '342, Figure 2 and page 2, lines 14-49. Consequently, the GB '342 reference also meets the language set forth in claim 3.

14. In regard to claim 4, the GB '342 reference further discloses that the introduced air is fresh air, in particular temperature-controlled fresh air, and contains engine bleed air (the air supplied by air distribution nozzles 27 is fresh air in the form of bleed air, which can also be temperature-controlled by means of air conditioning unit 22). See GB '342, Figure 2 and page 2, lines 1-10; also see section 112 rejections above. Therefore, the GB '342 reference also meets the language set forth in this claim.

15. In regard to claim 5, the GB '342 reference further discloses that the introduced air also contains recirculated air (the air supplied by floor airflow openings 20 and side vents 21 comprises recirculated, secondary air that has been entrained from the aircraft compartment 13 as denoted by airflow arrows 13a in Fig. 4). Refer to GB '342, Figures 3-4 and page 2, lines 14-23. Thus, the GB '342 reference meets the language set forth in claim 5.

16. Moreover, in regard to claim 6, the GB '342 reference discloses all of the claimed elements, including: at least a first air line branching (e.g., duct 25 which feeding overhead manifold 26) that leads to a first region (e.g., upper region of the aircraft cabin, which is served by air distribution nozzles 27) of the passenger cabin (compartment) remote from passengers; and at least a second line branching (e.g., duct 10 feeding underfloor manifold 15) that leads to a second region (e.g., near the floor 14 of the aircraft cabin, which are served by side vents 21) of the passenger cabin, said second region (near the floor 14 of the aircraft cabin) closer to passengers than said first region (upper region of the aircraft cabin); means (e.g., duct 6, air conditioning unit 22, duct immediately downstream of air conditioning unit 22) for conveying air at different temperatures simultaneously through the first and second line branchings (25, 10), wherein, when cooling is required (e.g., by air conditioning unit 22), said conveying means (e.g., air conditioning unit 22 and the duct immediately downstream of air conditioning unit 22) feeds air through the first line branching (25), said air being at a lower temperature (e.g., cooled air) than air fed through the second line branching (10), which comprises hot bleed air. Refer to GB '342, Figures 1-3; page 1, lines 75-92; and page 2, lines 1-124. Therefore, because all of the elements in claim 6 of this application are disclosed by the GB '342 reference, this claim is rejected in accordance with 35 U.S.C. 102(b).

17. In regard to claim 7, the GB '342 reference further discloses that the first line branching (e.g., duct 25 feeding overhead manifold 26) leads into the upper region (e.g., upper region of the aircraft cabin, which is served by air distribution nozzles 27) and the second line branching (e.g., duct 10 feeding underfloor manifold 15) leads into the floor region (14) of the passenger cabin (compartment). See GB '342, Figure 2 and page 2, lines 14-49. Thus, the GB '342 reference meets the language of this claim.

Claim Rejections - 35 USC § 103

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

19. **Claims 8, 9, and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over UK Patent No. GB 954,342 ("GB '342") in view of Scheffler et al. (US 6,306,032). These two references, when considered together, teach all of the elements recited in **claims 8, 9, and 10** of this application.

20. In particular, claim 8 of this application is obvious when the GB '342 reference is viewed in light of Scheffler et al. As described above, the GB '342 reference discloses all the elements of base claim 6, the claim upon which this claim depends. Moreover, with respect to claim 8, the GB '342 reference further discloses that the first line branching (e.g., duct 25 feeding overhead manifold 26) is connected to at least one feed line (e.g., discharge duct of air conditioning unit 22) for temperature-controlled fresh air, and to at least one feed line (e.g., bypass duct 23) for hot

engine bleed air. Refer to GB '342, Figure 2 and page 2, lines 39-46. However, claim 8 of this application further discloses that the first line branching also is connected to at least one feed line for recirculated air. The GB '342 reference does not contain this additional limitation. Scheffler et al., although, teaches an air-conditioning system for a plurality of zones (e.g., freight hold space 4, sleeping cabin 17, sleeping cabin 18) within an aircraft, having a first line branching (first supply air line 31) that is connected to both a feed line (discharge line connected to air mixer unit 1) for temperature-controlled fresh/recirculated air and a feed line (first trimming air line 71) for hot propulsion feed air, and a second line branching (second supply air line 32) that is connected to both a feed line (discharge line connected to air mixer unit 1) for temperature-controlled fresh/recirculated air and a feed line (first trimming air line 72) for hot propulsion feed air so that the temperature of the supply air can be adjusted after it leaves the air mixer unit (1) and energy can be conserved by utilizing previously conditioned recirculated air.

. Refer to Scheffler et al., Figure 2; column 4, lines 34-63; and column 9, lines 15-34.

Therefore, when the GB '342 reference is viewed in light of Scheffler et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the aircraft air-conditioning system of the GB '342 reference by additionally connecting the first line branching (duct 25) to a feed line for recirculated air, as taught by Scheffler et al., in order to enable energy to be conserved by utilizing previously conditioned recirculated air.

21. Moreover, claim 9 of this application is obvious when the GB '342 reference is viewed in light of Scheffler et al. As described above, the GB '342 reference discloses all the elements of base claim 6, the claim upon which this claim depends. However, claim 9 of this application further discloses that the second line branching is connected at least one feed line for

temperature-controlled fresh air and recirculated air, and to at least one feed line for hot engine bleed air. The GB '342 reference discloses that the second line branching (duct 6) is connected to an engine bleed air feed line (see Fig. 2), but it does not expressly disclose that the second line branching (duct 6) is also connected to at least one feed line for temperature-controlled fresh air and recirculated air. Scheffler et al., although, teaches air-conditioning system a plurality of zones (e.g., freight hold space 4, sleeping cabin 17, sleeping cabin 18) within an aircraft, having a first line branching (first supply air line 31) that is connected to both a feed line (discharge line connected to air mixer unit 1) for temperature-controlled fresh/recirculated air and a feed line (first trimming air line 71) for hot propulsion feed air, and a second line branching (second supply air line 32) that is connected to both a feed line (discharge line connected to air mixer unit 1) for temperature-controlled fresh/recirculated air and a feed line (first trimming air line 72) for hot propulsion feed air so that the temperature of the supply air can be adjusted after it leaves the air mixer unit (1). Refer to Scheffler et al., Figure 2; column 4, lines 34-63; and column 9, lines 15-34. Therefore, when the GB '342 reference is viewed in light of Scheffler et al., it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the aircraft air-conditioning system of the GB '342 reference by connecting the second line branching (duct 6) to both a feed line for temperature-controlled fresh/recirculated air and an engine bleed air feed line, as taught by Scheffler et al., in order to enable the temperature of the supply air delivered to the floor region (14) to be adjusted.

22. In regard to claim 10, the GB '342 reference further discloses control means (e.g., bypass valve 24, jet pumps 12) for controlling the ratio of the engine bleed air to fresh air and recirculated air in the first and second line branchings (in the first duct branching 25, warm bleed

air in bypass duct 23 is mixed with fresh, conditioned air from air conditioning unit 22 by adjusting bypass valve 24; in the second duct branching 10, warm bleed air (primary air) is mixed with entrained, recirculated air (secondary air) at jet pumps 12). See GB'342, Figures 2-3 and page 2, lines 14-46. Therefore, the GB'342 reference in view of Scheffler et al. also renders the limitations set forth in this claim obvious.

23. **Claims 11 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over UK Patent No. GB 954,342 ("GB '342") in view of Best (US 3,045,983). These two references, when considered together, teach all of the elements recited in **claims 11 and 12** of this application.

24. In particular, claim 11 of this application is obvious when the GB '342 reference is viewed in light of Best. As described above, the GB '342 reference discloses all the elements of base claim 1, the claim upon which this claim depends. However, claim 11 of this application further discloses that the introduced air contains an adjustable amount of engine bleed air, the adjustable amount of engine bleed air determined by temperature measurements of the passenger cabin. The GB '342 reference does not contain this additional limitation. Best, although, teaches a ram air control assembly for an aircraft air conditioning system, wherein air introduced into an aircraft cabin (16) through conduit (46) contains an adjustable amount of engine bleed air as controlled by valve (48), the adjustable amount of engine bleed air determined by temperature measurements of the passenger cabin (16) as determined by temperature sensitive element (42), for the purpose of accurately controlling the temperature of the aircraft cabin (16) by regulating the amount of engine bleed air being introduced therein. Refer to Best, Figure 1 and column 3, lines 7-18. Therefore, when the GB '342 reference is viewed in light of Best, it would have been

obvious to one having ordinary skill in the art at the time the invention was made to modify the aircraft air-conditioning system of the GB '342 reference by controlling the amount of engine bleed air being introduced into the passenger cabin in accordance with temperature measurements taken therein, as taught by Best, in order to more accurately control the temperature of the passenger cabin by regulating the amount of engine bleed air being introduced into the cabin.

25. Moreover, claim 12 of this application is obvious when the GB '342 reference is viewed in light of Best. As described above, the GB '342 reference discloses all the elements of base claim 6, the claim upon which this claim depends. Moreover, with respect to claim 12, the GB '342 reference further discloses that the first line branching (e.g., duct 25 which feeding overhead manifold 26) and the second line branching (e.g., duct 10 feeding underfloor manifold 15) are coupled to at least one feed line (e.g., duct 4) for hot engine bleed air via lines (ducts 6, 7). Refer to GB '342, Figure 2 and page 2, lines 3-13. However, claim 12 of this application further discloses that the feed line for hot engine bleed air includes at least one valve adjusting the amount of hot engine bleed air delivered to the passenger cabin. The GB '342 reference does not contain this additional limitation. Best, although, teaches a ram air control assembly for an aircraft air conditioning system, wherein air introduced into an aircraft cabin (16) through engine bleed air feed line (conduit 46) contains an adjustable amount of engine bleed air as controlled by adjustable valve (48) in the engine bleed air feed line (46), the adjustable amount of engine bleed air determined by temperature measurements of the passenger cabin (16) as determined by temperature sensitive element (42), for the purpose of accurately controlling the temperature of the aircraft cabin (16) by regulating the amount of engine bleed air being introduced therein.

Refer to Best, Figure 1 and column 3, lines 7-18. Therefore, when the GB '342 reference is viewed in light of Best, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the aircraft air-conditioning system of the GB '342 reference by replacing the valve (5) in the engine bleed air feed line (4) with an adjustable valve (48) that is operable to adjust the amount of hot engine bleed air delivered to the passenger cabin, as taught by Best, in order to more accurately control the temperature of the passenger cabin by regulating the amount of engine bleed air being introduced therein.

Response to Arguments

26. Applicant's arguments filed September 18, 2009 have been fully considered but they are not persuasive for the reasons set forth below.

First, contrary to the Applicant's allegations, the GB '342 reference clearly discloses both an aircraft heating system for heating the passenger cabin of an aircraft and an aircraft cooling system for cooling the passenger cabin. In particular, the air conditioning unit (22) in GB '342 is used to cool the air in the passenger cabin. Refer to GB '342, Figure 2 and page 2, lines 50-62. Therefore, the GB '342 reference clearly discloses an environmental conditioning system for an aircraft cabin that has both heating and cooling capabilities.

Moreover, the Applicant unconvincingly asserts that the GB '342 reference teaches away from delivering air at sites remote from passengers at a lower temperature than at sites closer to passengers. The Examiner respectfully disagrees. The GB '342 reference in no way teaches away from this airflow delivery configuration. In fact, as described above in detail, the GB '342 reference clearly discloses delivering cool air from air conditioning unit (22) at sites remote from passengers (e.g., in the upper region of the aircraft cabin, served by air distribution nozzles 27),

while delivering warm engine bleed air at sites closer to passengers (e.g., near the floor 14 of the aircraft cabin, served by floor airflow openings 20 and side vents 21). Refer to GB '342, Figure 2 and page 2, lines 14-62. In his Remarks, it is appears that the Applicant may be improperly focusing on only one mode of operation disclosed in the GB '342 reference. (See Applicant's Remarks dated September 18, 2009, page 17). When the environmental conditioning system of GB '342 is operating in a cooling mode, it is abundantly clear that all of the cool air is supplied *only* at sites remote from the passengers (e.g., upper region of the aircraft cabin) because the air conditioning unit (22) is only connected to upper air distribution nozzles (27), and not, to any of the floor level distribution vents.

Also, in his Remarks, the Applicant contends that "[t]o the extent that it could be argued that the entirety of the hot bleed air could be directed through an air conditioner and then cooled before delivery to the overhead manifold, that operation of GB '342 would be inefficient and counterintuitive." (Refer to Applicant's Remarks dated September 18, 2009, page 17). This contention is without probative value in the case at hand because the Examiner has not relied upon any such construction in the rejections presented above. This suggested modification of the GB '342 aircraft cabin conditioning system is unnecessary for meeting the claimed limitations. Rather, as set forth above, the GB '342 disclosure anticipates the limitations set forth in independent claims 1 and 6 of this application.

Furthermore, contrary to the Applicant's allegations, one of ordinary skill in the art would have combined the Scheffler et al. aircraft air conditioning system with the GB '342 system. Like the GB '342 reference, Scheffler et al. is also concerned with air conditioning the passenger cabin (e.g., sleeping cabins 17, 18) of an aircraft. Refer to Scheffler et al., Figure 2.

The mere fact that some portions of the conditioned cabin described in Scheffler et al. may be located below the main floor level of the passenger cabin in no way negates the motivation to combine the teachings of this reference with the GB '342 base reference. After all, both references are exclusively concerned with the environmental conditioning of an aircraft passenger cabin.

In addition, as described above, the limitations set forth in new claims 11 and 12 are rendered obvious by the combined teachings of the GB '342 reference and Best. There is no evidence in the GB '342 reference that providing an essentially constant mass flow rate of bleed air is a critical feature of the GB '342 system. Therefore, it would have been obvious to one of ordinary skill in the art to apply the teachings of Best to the GB '342 system in order to approve the overall functionality of this system (see above rejections).

Conclusion

27. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick F. O'Reilly III whose telephone number is (571) 272-3424. The examiner can normally be reached on Monday through Friday, 8:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven B. McAllister can be reached on (571) 272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Patrick F. O'Reilly III/
Examiner, Art Unit 3749

/Steven B. McAllister/
Supervisory Patent Examiner, Art Unit 3749